

## The potential of digital solutions for integration of health and social care services

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## **The potential of digital solutions for integration of health and social care services**

### ***Aberdeen City Health and Social Care Partnership Exploratory***

**23<sup>rd</sup> November 2016, the Beach Ballroom, Aberdeen**

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## **Executive Summary**

Health and social care services are over-stretched and struggling to cope with an ageing population and an increasing number of people suffering from long term conditions. There is a need for care to be shifted from acute hospital sites to capable community settings. This shift involves the integration of health and social care services, which the Scottish Government expects will save £137M-£158M annually, and will allow for the health and care resources to be used more appropriately.

Health and social care partnerships were launched across Scotland on 1st April 2016, bringing the NHS and local authority services together to benefit local communities. The Aberdeen City Health and Social Care Partnership (ACHSCP) called upon the Digital Health and Care Institute to help them investigate the potential digital technologies on offer in organising care in community settings, thus alleviating the pressures on the health and care services. The partnership intends to implement digital solutions in three care facilities across Aberdeen with the intention of making Aberdeen the beacon of digital health innovations in Scotland. The Exploratory event hosted by ACHSCP and DHI brought together key stakeholders from health and care, academia, industry, innovation centres, local authority and the third sector. The focus of the day was on three major themes: end of life care, hospital at home and management of long-term conditions.

First part of the day consisted of a series of presentations introducing the participants to the potential of digital technologies in supporting care away from acute settings. In the afternoon the DHI ran an Exploratory workshop where the participants worked in small groups through different scenarios based on the three key themes. The aim was for the participants to devise a person-centred care plan for their patient case and identify suitable ways to support this using digital technologies where appropriate. This methodology showed the multiplicity of types of care needs and carers involved in each case, and the issues arising from this. The participants were also pushed to identify what types of changes were necessary for the digital technologies identified to be implemented in Aberdeen, and who or what ultimately were responsible for realising these changes.

The output of the exploratory is a set of eight recommendations to the ACHSCP for effecting new, integrated working practices and culture for integrating health and social care services, and using digital technologies. The most important issues were the agreement of shared information and data governance protocols between the two services, and the implementation of a shared IT-infrastructure for data and information governance and communication.

The ultimate responsibility for affecting the proposed changes, with strategic leadership both on the local and national levels, was seen to be with the Integrated Joint Boards, the City Council, the NHS Grampian; eHealth, Primary, and Secondary care clinical leads, and the Scottish Government.

This report will give you a more detailed overview of the structure of the exploratory and its findings. Going forward, ACHSCP aim to have improved integration of health and social care services with digital technology at the centre of this integration.

## **Introduction**

Due to the Scotland's ageing population and the increased number of people living with long term conditions the need for health and social care services to be better integrated has never. The Scottish Government estimates that there will be a 18-29% increase in the need for health and social care services between 2010 and 2030. The integration of the services is expected to save Scotland £138M-157M annually.

Health and social care partnerships were launched across Scotland on 1st April 2016, bringing the NHS and local authority services together to benefit local communities. Every partnership's vision is to create "A caring partnership working together with our city communities to enable people to achieve fulfilling and healthier lives and wellbeing." These partnerships (31 in total) will manage £8bn of health and social care resources. The Scottish Government will provide more than £500M over the next three years from 2015/16 to 2017/18 to help the partnerships establish new ways of working that focus on prevention of poor health and early intervention in a bid to reduce long-term costs. The principle ambitions of health and social care integration are to:

- Support the improvement of the quality and consistency of services for patients, carers, service-users and their families.
- Provide seamless, joined-up quality health and social care services to care for people in their homes or a homely setting, where appropriate.
- Ensure resources are used effectively and efficiently to deliver services.

The Aberdeen city partnership brings together NHS Grampian and Aberdeen City Council services to deliver adult primary health care and adult social care to the people of Aberdeen with a total annual revenue of £250M.

The Digital Health and Care Institute (DHI) was launched in 2013 as part of the Innovation Centre programme which was created to bridge the gap between academic research within universities, and business opportunities. There are eight innovation centres across Scotland and collectively they aim to promote economic development through the creation of jobs and through the commercialisation of research. The DHI is worth over £4.5M and has over 100 active projects.

The Aberdeen City Health and Social Care Partnership (ACHSCP) and the Digital Health and Care Institute (DHI) organised an Exploratory event on the 23<sup>rd</sup> of November 2016 to study the potential of digital health technologies for the improved integration of health and social care services. The ACHSCP intends to implement digital solutions in three care facilities across Aberdeen with the intention of making Aberdeen the beacon of digital health innovations in Scotland.

The aim of the Exploratory event was to investigate the integration of services using digital technologies. The event focussed on three major themes: end of life care, hospital at home and management of long-term conditions. With more of an ageing population than ever before

and the rise in numbers of people with long term conditions, these key areas of service delivery must be enhanced greatly to sustain the quality of care required throughout the changing demographic. For example, delayed discharge alone costs the NHS Scotland over £114M annually. Therefore, it is imperative to ensure that only those who need acute hospital treatment are being cared for in hospital, and that there are safe alternatives available in the community for those whose care needs are not acute.

1. End of life care - includes patients with terminal illnesses who are likely to die within 12 months, as well as patients whose death is imminent. This care improves the quality of life of the patient and their family by preventing or alleviating suffering. The care involves two stages, namely the identification of care needs, the communication with patients, and care planning. Digital technologies may allow palliative care staff to better manage these challenges, but also allow for patients to remain in a homely setting for longer, where appropriate.
2. Hospital at home - allows patients to remain at home or in a homely setting (care home) for longer by ensuring the necessary equipment is installed in these settings. Hospital at home initiatives mean that patients' health can be monitored at home instead of in expensive acute hospital settings. Digital solutions, such as remote monitoring and enhanced telehealth, can allow for this concept to be realised.
3. Management of long term conditions - In 2015 over 40% of Scotland's population had at least one long term condition. Therefore ensuring that these people understand how to manage their condition, and thence prevent further illness, is imperative. Digital solutions, such as interactive support websites, can guide patients through the management of their long term conditions.

### **Exploratory event – presentations**

Sixty-five participants from diverse sectors (the NHS, social care, local authority, academia, third sector, industry, business) attended the event. This guaranteed a good mix of ideas, ensuring the day's outputs touched upon the many facets of digital health within the partnership.

The first part of the event comprised of presentations introducing the concept and the three themes of the day, and inspiring the participants to envisage digital health solutions in successfully integrating health and social care services. Dr Sanna Rimpiläinen and Stuart Deed from the Digital Health and Care Institute gave participants an overview the work that the DHI is currently carrying out in helping people realise the potential of digital health. Rimpiläinen's presentations discussed the digital switch-over due to happen in 2018, when BT is planning to discontinue its analogue phone services, which most of the current telecare services rely on. This is likely to cause increased connectivity issues for the current service.

The talk then explored the art of the possible in rolling out digital solutions for telecare. Deed put forward a vision of Scotland as the market leader in digital health and care. Two businesses within the digital health space in Scotland as well as a representative from another innovation centre also presented at the event:

1. Geoff Wilcock and David Sim from OpenBrolly spoke about their work in supporting people with LTCs (IBD) and the work they have been doing around a virtual hospice concept. They also shared ideas of how to create a collaborative health and social care team.
2. Professor Lesley Diack from Robert Gordon University and eMAP Carehomes presented a concept for electronic prescription service created in the US to monitor patients on polymedication and how this could be adapted to the Scottish context to support care homes to deliver a more efficient service.
3. Helge Hansen from The Construction Scotland Innovation Centre demonstrated the potential of the construction industry to synergise with the health and social care sector to make hospital at home a reality through modular housing concepts. These modular housing complexes would enable units to be installed and uninstalled so that homes can be adapted to support the changing needs of the person living in the home. For example, an oxygen tank unit could be installed for a

person suffering from COPD and readings could be sent to healthcare professionals. This could fore-warn of episodes and promote the prevention of further episodes.

### **Exploratory event – the workshop**

The second part of the event consisted of a hands-on Exploratory workshop. The aim of the workshop was to give the participants space and time to think about the potential that the use of digital solutions might offer for the integration of health and social care in Aberdeen. The methodology of the workshop guided the participants to think about person-centred care using realistic case-studies based on the three themes of the day. The scenarios included patient cases of diabetes, and anxiety and depression as examples of coping with long-term conditions; COPD and dementia for hospital at home theme, and a patient with MS for end of life care. Through working up a person-centred care routine for their patient case, the groups identified issues or problems that might arise in the course of the routine, and pinpointed which issues could be solved or alleviated through digital solutions. The participants were then asked to suggest digital solutions, ranking three of the most important ones to consider further. Taking the three proposed digital solutions, the participants were asked to deem what should need to change in terms of making the selected solutions a reality, what the Partnership should do in light of these, and who is ultimately responsible for making the required changes a reality. There were seven mixed groups of participants in total working on five scenarios.

Below we will briefly introduce each scenario followed by an analysis of the outcomes of the group work, and a set of recommendations based on these. The full scenarios, and the working of each group is collated in appendix a.

#### **The scenarios:**

1. Hospital at home:
  - a) Dorothy, a 69-year-old with COPD who lives on her own.
  - b) Elizabeth, an 80-year-old with dementia moving into sheltered housing
2. Management of long term conditions:
  - a) Billy, a 69-year-old with Type II diabetes who has recently had an amputation.
  - b) David, a 17-year-old with depression and anxiety struggling at school.
3. End of life care:
  - a) Simon, a 48-year-old with multiple sclerosis suffering from progressively severe symptoms.



## **Analysis**

### Shared IT-Infrastructure

A characteristic identified by all groups across the scenarios was the number of diverse participants involved in the care, and the question of coordination of care responsibilities between them. The solution each group arrived at was having an interoperable IT-infrastructure, which would support a joint information, communication and data sharing platform between the care providers, including informal carers. The ACHSCP already use a browser based online meeting platform ODRO, but this system alone does not meet the needs for a comprehensive data and information sharing infrastructure. For example, an Electronic Health Records system would usefully complement a communication system like ODRO.

For the Partnership to take full advantage of ODRO, and of any other online collaboration system, shared information and data governance structures and protocols need to be in place. Work is under way for creating these, including data protection regulations. Completion of this work is a prerequisite for smooth, reliable and comprehensive integration of health and social care services to be made reality.

### Tele-monitoring technologies

Each group saw the benefits of supporting the health and care of their case through selected tele-monitoring technologies. Ideally these sensors and monitors would automatically feed relevant information into an Electronic Health Record, or these could be manually recorded and shared via it.

Systems such as Possum (Electronic Assistive Technology for the elderly or the disabled, for example SMART or ROWAN rooms equipped with an environmental control system) or Just checking (motion sensors connected to an online activity monitoring system) were named as alternatives for monitoring people with memory or mobility problems, when the carers could not be around at all times. MyDiabetesMyWay was mentioned as an example of home health monitoring technology helping diabetes patients to self-manage their condition. Self-management technologies also include online help services and peer-support networks in social media for different conditions, such as mental health problems. Simple solutions, such a secure video conferencing technology, were suggested to be used for routine clinic appointments, and in support of physio and mental health therapy sessions instead of face-to-face sessions (where appropriate). To alleviate social isolation and loneliness groups suggested an online be-friending service as one solution.

Adaptable housing is an emerging solution to support independent living. For example, Albyn housing association is designing modular, adaptable housing, which incorporates passive and active monitoring technologies, and which can be amended to meet the changing needs of the resident.

Effective use of remote- and self-monitoring technologies assumes the availability of a fast and secure broadband, wi-fi, and mobile coverage, as well as connectivity to an online data sharing platform.

It was suggested that the partnership could develop an online catalogue for verified digital health resources and applications, while also being responsible for the verification of the products' effectiveness and security. A service like this would be useful also on a national level.

### Changing practices

Merging two traditionally separate services requires a lot of effort. Integration of the health and social care services and the adoption of digitally enhanced ways of working and collaborating mean changing the working cultures and practices. Both staff and citizens not only need to learn how the technologies work, but they will also need to adopt these as part of their day-to-day lives and work. This requires training and support both for staff and the citizens, and careful change management.

Involving the staff on the ground at all levels of the re-design of the service and planning the new ways of working is crucial for the success of the change. This includes allowing the staff from both services to spend as much time as possible getting to know each other and each other's ways of working. In an ideal world co-location of the services would be the best solution, but that failing allowing the staff to communicate digitally without technological barriers is essential.

Other ideas from the groups for how to support adoption of digital ways of working included having cross-sector champions to share learning and empower the members; engagement with early-adopters to influence innovation; having Telehealth consultants available for the health and social care huddles to help improve communication and collaboration between the different parties, and upskilling the service users. IT skills support and training needs to be easily available and accessible for all.

Before rolling out the changes, it was suggested that smaller scale pilots be run in smaller locales, these be tested and evaluated rigorously in order to effect evidence based practice. Sharing of good practice between different parts of the service should be made a priority.

### Role of the partnership

Most groups saw the role of the Aberdeen Health and Social Care Partnership as providing clear and strategic leadership and drive, as well as sufficient investment and funding for getting the proposed changes under way and implemented. Especially investment in infrastructure, and sorting out the information, data governance and data protection issues were seen as important.

### Other responsibilities included

- review of existing technologies, infrastructures and other assets available in order to utilise these if appropriate
- research into new technologies, and if these could be adopted in use by the partnership;
- connecting relevant services, and creating and sustaining a wider partnership with all other partners. This includes keeping everyone engaged and informed of the progress of the changes;
- review of policies and procedures;
- providing professional project management.

Aberdeen City HSCP's role was seen to work between the three Integrated Joint Boards (Aberdeen City, Aberdeenshire and Moray) with NHS Grampian, and to effect change at national level. The partnership was asked to take lead on data sharing best practice using local work as evidence, as well as to drive the uptake of telehealth consultants.

Organising coordination and review of care, arranging training, making all staff engaged in implementing digital infrastructures and in adopting the new ways of working fell to the remit of the Partnership, too. Value of the changes needs to be made evident to all involved.

### Where the buck stops

The ultimate responsibility for affecting the proposed changes, with strategic leaderships both on the local and national levels, was seen to be with the Integrated Joint Boards, the City Council, the NHS Grampian; EHealth, Primary, and Secondary care clinical leads, and the Scottish Government. They were called to provide clear directives, and shared protocols and standards for implementing digital infrastructures. The duty of the private sector is to improve telecoms etc., and to produce new digital devices. The Integrated Joint Boards were identified as responsible for finances, while the citizens' duty was to get involved in their own healthcare.

## Recommendations

There are eight recommendations for effecting new, integrated working practices and culture, incorporating digital technologies, between the health and social care services:

1. Designing *shared information and data governance protocols* for the partnership should be completed as the first priority.
2. In parallel to this, work to design/adopt and implement *a shared data and information sharing platform* (incorporating an Electronic Health Record system) between health and social care services should be under way.
  - a. Involving practitioners and citizens in all stages of design is vital to make it work. Practitioners are the experts of their work.
  - b. The platform needs to work on broadband, mobile and wireless devices. We recommend considering cloud-based services, which are accessible from anywhere at any time, and easily scalable as required. We also recommend using Agile design methodology – please see e.g. Christopher Wroath at NES for more information.
  - c. Smaller scale pilot projects be run in smaller locales, these be tested and evaluated rigorously in order to effect evidence based practice. Sharing of good practice between different parts of the service should be made a priority.
3. *Sustained and sufficient investment* in the digital systems by ACHSCP.
4. The physical *co-location of health and social care staff* would be the best solution for integrating the services. If this is not possible, pulling down any barriers to shared communication, data and information sharing between staff virtually and otherwise, and arranging opportunities for staff to meet regularly face-to-face, supported by VCU-meetings, should be made possible.
5. The Partnership should employ *change management consultants* to initiate a *new, shared working culture and practices* involving the use of digital technologies.
6. Arrange *sufficient training* for all staff and service users to start utilising digital technologies and the digital information sharing platform as part of their work and as part of the care routines.
7. Considering *innovative, adaptable models for social housing* to be built in the future as a basis for arranging care in the community.
8. *ACHSCP needs to show clear direction and leadership* in making these changes a reality in Aberdeen.

## Appendix

### Scenario 1: Hospital at Home

#### **Scenario 1: Dorothy – Hospital at Home**

Dorothy is 69 years old and has COPD. She has smoked since she was 18 and did not think anything of it as smoking was the 'norm' when she was growing up. She lives alone in a bungalow in a small rural town in Aberdeen as her husband/ carer passed away last year and her two children live in Edinburgh. She was diagnosed with COPD five years ago and was urged to quit smoking right away to improve her prognosis, which she did. Her children and their families visit when they can but she is feeling isolated and feels that she needs more support to care for herself now that her husband is not here. Her COPD has become progressively worse over the past few years and is now on home oxygen therapy as she gets breathless very quickly.

Group 5 worked through the Dorothy's COPD scenario in their workshop. They addressed the scenario using a day plan. Her care needs included a carer assisted shower, prompted medication, and a support plan. The group mapped out a support network of both assumed and ideal carers and systems. The assumed network consisted of Dorothy's children, Home carers, the District Nurse, a specialist COPD nurse, her GP, Pharmacy, Care Manager, Telecare services and delivery of community meals. The ideal actors included automatic temperature sensors, connectivity through Skype, anxiety management, and mobile health monitoring.

The main issues arising from Dorothy's care scenario were coordinating her care between the different parties, and having a system that would allow everyone involved to connect and communicate with each other, especially during crisis or hospital admission. Other problems included digital connectivity and social isolation, lacking technology skills, and having a sufficient funding for Dorothy's care. Clinical monitoring and data protection issues were also raised.

The opportunities and solutions to the problem that the group suggested were a shared, cloud- or cloud/hybrid based information system, sensors to be used for remote monitoring Dorothy and her condition, and the use of a digital Befriending service to alleviate her social isolation.

To help implement these solutions, the group suggested enrolling a good, digital infrastructure in homes, arranging IT skills support and training for services users, and securing the necessary monitoring equipment for patient use. In addition, having an ebooking system in place for patients was seen as essential. The group saw the partnership's role in implementing a digital multi-user facility and security system, in developing a digital demonstrator suite/site for testing the system out, and engaging the service users in all stages of planning. The partnership should also review existing solutions to challenges they are facing. The group decided that it was the Partnership and Scottish Government's responsibility to discuss and engage with each other and all key stakeholders in the health and social care environment in order to make digital solutions a reality within the partnership.

## Scenario 2: Management of Long-Term Conditions

### **Scenario 2: Billy – Management of Long-Term Conditions**

Billy is a 69-year-old man, who has been living with Type II diabetes for three years. He lives with his wife Andrea in a two storey house in Aberdeen. He retired 5 years ago and worked as a lorry driver for most of his life. He has been overweight for most of his life, eating a poor diet with little exercise and long hours, sitting down all day made it difficult for him to fit in a healthy lifestyle. When he was diagnosed with T2DM two years ago, he didn't take it seriously. According to his friends and family it was nothing to worry about as the majority of men his age have the condition – despite the doctor emphasizing its dangers. He continued with his unhealthy lifestyle, drinking heavily and eating meals rich in fat and sugar. He has gangrene on his big toes and the doctor has warned him that he must take his condition seriously or there will be serious consequences. Just a week ago he was brought to hospital and had to have his foot amputated. He has now been transferred back to his house from the post-operative ward.

Two groups, 6 and 8, worked on the management of long-term conditions, the case of a diabetic called Billy.

The time frame for Billy's care devised by group 8 was based on a timeframe from the day he was discharged from the hospital up to 2-3 months of recovery. The group ascertained that Billy needs help with managing and dressing the wounds and managing the pain; support and help with changing his lifestyle to be able to start managing his condition better in the future; help with mobility issues living with just one foot, and resulting from the amputation of his foot, help with learning to use the new equipment that needs to be installed in his house to help him with everyday life, like a stair lift. The care providers



identified included most prominently his wife, but also NHS staff, such as community nurses, physio and Occupational Therapists, Billy's GP, other possible carers, out of hours service/NHS24, Secondary care personnel and Billy himself.

Patient's willingness and ability to change, his wife's ability to care for her husband and respond to the specific needs arising from his new situation, and the suitability of their housing were identified as main concerns. Lack of resources in the NHS for sufficient care given by OTs or physiotherapists were listed as problems, which could impact the rate of recovery. A concern was also the current lack of infrastructure for information sharing between the different parties involved in Billy's care. Without this, the care given would likely be more expensive, less effective and disjointed. Of course, Billy might not wish to have his data shared with different parties, a further issue complicating matters.

An electronic patient record system for information storing and sharing between the patient and all the relevant parties involved in the patient's care was ascertained as a key solution to the issues identified, as well as having home health monitoring technology with digital information feeding into the EHR for the carers to access digitally (e.g. MyDiabetesMyWay). The group also suggested having a telehealth consultant available for the health and social care huddle to help improve communication and collaboration between the different parties.

For these changes to take effect, a profound cultural change is needed to ensure people commit to digital ways of working and information sharing. This on the other hand requires staff training and support, and change management. Technological change is required to allow all parties involved in a person's care to teleconsult without barriers. Investment, political will and national directive is necessary for developing patient held digital files and digital platforms for storing and sharing these files. Common data sharing protocols are crucial for information to flow as well as shared reporting between the health and social care services. Simple, accessible home health monitoring technology is required both with mobile and broadband access.

The group saw the partnership as working between the three Integrated Joint Boards (IJBs) partnered with NHS Grampian to effect change at national level. The partnerships should take lead on sharing best practices using local work as evidence, as well as to drive the uptake of telehealth consultants. The ultimate responsibility for these changes was seen to be with strategic leadership both at the local and national levels with the IJBs, Council, the NHS; eHealth, Primary, and secondary care clinical leads, and

the Scottish Government for clear directive, protocols and standards for implementing digital infrastructures, and the Private sector for improving telecoms and producing new digital devices.

For group 6 Billy's needs focussed on personal care and wound dressing. The plethora of care providers largely the same as above, with emphasis on Billy's wife, his diabetic team, nutritionist, and orthopaedist. The issues identified by the group had to do with the reduced mobility and independence of Billy, and his ability to self-manage his condition. Also the suitability of his housing and its digital readiness were questioned. Poor discharge planning was also raised as an issue, as health and care providers cannot communicate well across services.

Digital solutions suggested by group 6 included adapting Billy's housing to allow for remote care (including access to Telehealth equipment, e.g. videoconferencing, to contact the health and social care staff instead of travelling to the clinic) and giving him and his carers education on diabetes self-management online, as well as access to digital monitoring equipment for controlling the condition. Similarly to group 8, group 6 pinpointed lack of practice and of infrastructure for data sharing between services, as well as the current working culture, and poor interoperability of devices were as limitations.

To support the implementation of the proposed solutions, technology funding should be increased, data sharing infrastructures created and supported, staff trained appropriately to work in a collaborative way and to share information. Integration of the services needs to happen on the ground and involve practitioners from health and social care in the planning of the new ways of working. The group identified the role of the partnership as coordinating and reviewing care and training, making sure all staff are engaged across the partnership, working to co-locate health and social care staff, and supporting the proper use of video conferencing facilities between the services.



### Scenario 3: Hospital at Home

#### **Scenario 3: Elizabeth – Hospital at Home**

Elizabeth is an 80-year-old woman with Dementia. She was diagnosed with the condition five years ago. When she was first diagnosed, Elizabeth stayed with her daughter and their family at their home in Aberdeen City, as Elizabeth was originally living alone since the passing of her husband six years ago. Elizabeth's condition has progressed fairly slowly meaning that she can still carry out the majority of her daily routine on her own. Although she does experience frequent episodes of memory loss when she can become very disorientated and upset and has a tendency to leave the house on her own. Therefore, her daughter could not fully meet the needs of her mother as she had to work and so her, Elizabeth and the family doctor agreed that it would be best if Elizabeth moved into a sheltered housing facility. She is enjoying the sheltered housing accommodation as there are other older people there that she can talk to and her family visit regularly but sometimes it is difficult for family to visit every day. Elizabeth's daughter has stipulated to the sheltered housing organisation that Elizabeth should retain her independence for as long as possible.

The group identified various care needs relating to Elizabeth's routine, including help with personal care, remembering to take her medications and to remain nourished and hydrated, as well as safe, social and active. As in the previous cases, there was a multitude of individuals and agencies involved in Elizabeth's care, both formally and informally, and similarly, coordinating care and sharing of information between these parties was identified as the main concern regarding Elizabeth's care plan. In addition, the group listed Dorothy's personal safety (e.g. wandering off, getting lost, forgetting to lock the door), her social isolation, anticipating future care issues and the level of technology readiness of people and agencies as problematic.

Digital solutions that can be used to help monitor people with memory issues are many. The group identified scheduling digital reminders and prompts for taking medication, or checking that the person is ok; GPS monitoring for allowing Dorothy some personal freedom and safety outside her home, and peace of mind for her carers in case she wanders off accidentally. Health sensors, such as Fitbits, and Passive monitoring sensors in the home would help in checking Dorothy's health (heart rate, oxygenation, movement, location, activity, sleep, etc). The benefits of social networking were also considered for someone with dementia, e.g. online befriending service, peer support or virtual networks for self-management in early stage dementia; as well as digital photo and music libraries enabling patients to revisit their memories. The group identified several limitations for using digital technologies

including the lack of comprehensive responder services, connectivity issues and lack of infrastructure, information governance issues, rules and regulations that may have legal ramifications.

The group discussed how in order to do this in practice, the infrastructure that supports information sharing and the use of digital and remote monitoring technologies has to be in place. Engagement with early adopters in order to influence innovation is seen as an important action. Furthermore, there is need for carrying out targeted tests of change in the actual settings, and evaluation of these. Investment should be targeted at pilots, and rolling out those that work.

The group noted that it was the role of the ACHSCP to offer clear leadership and direction, review policy and procedures, and sort out information governance and data protection issues as the first priority in order to enable data collection and smooth information flow between the services. The Partnerships should also work with the community to identify what technology is already available and possibly in use, and utilise that. Those responsible for effecting these changes are IJB, Partners, Community and Innovation providers.

#### Scenario 4: Management of Long-Term Conditions

##### **Scenario 4: David – Management of Long-Term Conditions**

David lives in Aberdeen and is in his 6th year of secondary school. He has recently been diagnosed with clinical depression and social anxiety disorder. David is sitting his Advanced Highers in modern studies, history and English as he wants study law at the University of Edinburgh next year. Despite having previously done well in school and being an outgoing person David has found the transition into his final year difficult and his grades are suffering. He is afraid of drawing attention to himself in class by asking what he thinks are 'stupid questions' and has avoided meeting with his teachers and talking about it with his parents. He experiences particular difficulty when teachers perform Q and A classes where there is less opportunity for him to hide than in normal lessons. His mouth gets dry and his heart begins to race when thinking about getting help. He has become more withdrawn, is beginning to feel depressed and has recently begun missing classes. On top of this David has started to avoid his friends and has begun worrying about his appearance, and grades. He states that he feels stupid and his friends no longer like him. Recently he has begun to think about leaving home and how it would be easier for him to fall asleep and never wake up. David's best friend left school the year before and has moved away to study at university. The last time he felt this way was when his parents separated when he was 11.

Two groups, 7 and 3, worked on David's case. **Group 7** worked through their scenario using important stages in David's daily and weekly schedule. The group saw David's care needs aligning with the same basic needs of any teenager, but with extra support from both his care providers - his parents, his guidance and class teachers, his GP, clinical psychologist - and David himself. The problems in the plan identified by the group were the existence of poor family dynamics, a lack of school engagement and GP input, and a poor general knowledge about David's conditions and symptoms by all involved parties. David's disengagement from his own life and condition, along with friendly interactions, were also highlighted as issues.

The three main opportunities that the group saw for digital solutions were to utilise video conferencing to bring together David's carers who would otherwise not discuss his case; to have digital support (Apps and self-help sites) to help David learn coping strategies for his episodes; and for David to have access to protected social media services to support his socialisation with others. It was also mentioned that a form of monitored supervision and facetime with his guidance/careers teacher could address his truancy.

To implement these solutions, also this group highlighted the necessity of a comprehensive and shared IT infrastructure for all digital solutions to be in place, and the need for care providers to be trained in the use of any technology and/or digital services. Further, both David and his carers would need to be fully educated on his condition, his symptoms and coping mechanisms. Finally, David would need to have access to the relevant technology at home to help him manage his condition.

The group decided that both the Partnership and the education sector were responsible in realising the suggested changes, with the partnership being responsible for investing in the relevant infrastructure, ensuring that all services can cooperate and communicate with each other, with little to no blockers between communication platforms. It was suggested that the partnership could also develop an online catalogue for verified digital health resources and applications, while also being responsible for the verification of the products effectiveness and security.

**Table 3** worked through the scenario with a focus on David's activities, his care needs were seen as his need to attend listening and talking therapies, and increased physical activity and participation in sport. The group selected David's councillor, his psychologists, psychiatrist, parents, family and friends, and school staff as responsible for providing David's care. The problems in David's care plan had to do with the fact that he has only recently been diagnosed, and he is isolating himself. There is an issue with whether the school is aware of his condition and whether his problems can be considered in the classroom. Supporting David to feel valued and self-manage his conditions were the main opportunities in this scenario. An online befriender service and linking of applications together to connect David with local mental health services to allow him access to an online professional Q and A were considered useful.

To achieve these solutions, the group decided that services would need to build on the existing digital infrastructure. David would need free and accessible Wi-Fi, and a device to access the services. Both is parent-carers and staff would require training in using these services. The partnership's role was to connect relevant services and other support together, mapping out all assets, and overall communication/participation throughout the care plan.

The group identified the Integrated Joint Board as being responsible for finance and the citizens for getting involved with their own healthcare. The group identified the next steps as being the continuous evaluation and evidencing of what works with regards to healthcare problems.

#### Scenario 5: End-of-Life Care

##### **Scenario 5: Simon – End-of-Life Care**

Simon was diagnosed with Primary-progressive Multiple Sclerosis at the age of 48, he is now 54. His initial symptoms were slight difficulty with walking, blurred vision in his left eye and numbness in his right hand. In the last six years Simons symptoms have severely progressed, he suffers from incontinence, Urinary tract infections, he has limited mobility and weakness throughout his body, trouble swallowing, along with cognitive and speech problems. Due to his mobility problems he has developed pressure sores which require treatment. Simon is from west hill, he is separated from his wife, who lives abroad, and has a son, John, who lives in Dundee. Simon moved into a care home when it became impossible for him to live by himself, recently Simon has been suffering from recurrent and severe urinary tract infections, and his difficulty swallowing has led to his developing aspiration pneumonia. John unable to take his father home and has requested that he be kept as comfortable and as pain free as possible. John wishes to be kept up to date on his father's state and has stated he is contactable 24/7.

This group devised a daily routine for Simon, who has various care needs bound up with all aspects of his daily life from the moment he woke to the moment he went to sleep, including the time in which he was asleep. The group identified several actors in his care provision including care home staff, various therapists (physio, Speech and language), NHS staff (GP's, nurses, pharmacist and pharmacy staff), friends, MS-Society, advocates and chaplaincy/counselling services involved in Simon's care.

The problems relating to Simon's care had to do generally with his quality of life, his mental health and wellbeing, his increasing dependency on others to look after himself, the recurrent hospitalisations due to infections, etc. Also, the care home as the sole solution for care for him was a issue to address.

The group discussed potential solutions to alleviate these issues, such as improving the connectivity of the Care Home to the Primary Care team, and using telehealth monitoring technologies to better monitor Simon to see if he needed help, even when staff were not available. Skype was mentioned as a way of keeping in touch with his son, who was not able to visit him daily.